

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Currently Amended): An electrophoresis apparatus comprising a planar plate formed therein with a channel for ~~electrophoretic~~ electrophoretic separation, ~~[[a]]~~ light irradiating means for irradiating an excitation beam into a detection part formed in a part of the channel, ~~a fluorescence~~ fluorescent detecting means for detecting a degree of fluorescence which is generated from a sample by the excitation beam, the channel having a rectangular cross-sectional shape and being composed of a top surface and a bottom surface which are parallel with ~~[[the]]~~ a surface of the planar plate, and left and right side wall surfaces, a ~~[[first]]~~ first flat and smooth incoming window formed in the bottom surface of the ~~channel~~ channel, a second flat and smooth incoming window formed on a surface of the planar plate at a position which is opposed to the first incoming window, for introducing an excitation beam into the planar plate, an excitation transmission path formed between the first and second incoming windows, a first flat and smooth outgoing window formed in one of ~~[[the]]~~ side wall surfaces of the channel, for emitting fluorescence from the sample, and a second flat and smooth outgoing window formed in a ~~[[side]]~~ side surface of the planar ~~plate~~ plate at a position opposed to the first outgoing window, for emitting the fluorescence outside of the planar plate, and a fluorescent transmission path between the first outgoing window and the second outgoing window.

Claim 2 (Currently Amended): An electrophoresis apparatus comprising a planar plate formed therein with a channel for ~~eletrophoretic~~ electrophoretic separation, ~~[[a]]~~ light irradiating means for irradiating an excitation beam into a detection part formed in a part of the channel, ~~a-fluorescence~~ fluorescent detecting means for detecting a degree of fluorescence which is generated from a sample by the excitation beam, the channel being a capillary channel having a ~~rectangular cross-sectional shape and being composed of a top surface and a bottom surface which are parallel with [[the]]a surface of the planar plate, and left and right side wall surfaces, a first flat and smooth-incoming window formed in one of [[the]] side wall surfaces of the capillary channel, for introducing the excitation [[bean]]beam into the channel, a second flat and smooth-incoming window formed on a surface of the planar plate at a position which is opposed to the first incoming window, for introducing an excitation beam into the planar plate, an excitation transmission path formed between the first and second incoming windows, a first flat and smooth-outgoing window formed in the bottom surface of the ~~of the channel, for emitting fluorescence from the sample, and a second flat and smooth-outgoing window formed in a surface of the planar palate-plate~~ at a position opposed to the first outgoing window, for emitting the fluorescence outside of the planar plate, and a fluorescent transmission path between the first outgoing window and the second outgoing window.~~

Claim 3 (Currently Amended): An electrophoresis apparatus as set forth claimed in claim 1, wherein said planar plate is formed of a transparent member

~~in its entirety, and said transparent member is adapted to serve as said excitation~~
transmission path and said ~~fluorescence~~ fluorescent transmission path.

Claim 4 (Currently Amended): An electrophoresis apparatus as set
~~forth~~claimed in claim 1, wherein light converging means is provided to either or each
of both said excitation transmission path and said ~~fluorescence~~ fluorescent
transmission path.

Claim 5 (Currently Amended): An electrophoresis apparatus as set
~~forth~~claimed in claim 1, wherein light splitting means is provided in the
~~fluorescence~~ said fluorescent transmission path.

Claim 6 (Currently Amended): An electrophoresis apparatus as set
~~forth~~claimed in claim 1, wherein a spatial filter is provided in the ~~fluorescence~~ said
fluorescent transmission path.

Claim 7 (Currently Amended): An electrophoresis apparatus as set
~~forth~~claimed in claim 1, wherein said planar plate is composed of a first planar plate
~~which is formed through transcription in one batch by means of a transcription mold~~
~~plate~~ incorporating a male structure for forming channels at predetermined positions
and a male structure for forming optical means, and a second transparent plate
joined to the first planar plate.

Claim 8 (Currently Amended): An electrophoresis apparatus as set forth ~~in~~claimed in claim ~~[[1]]~~7, wherein said male and female structures in the transcription mold are fine structures which are formed by optically exposing and then developing a photosensitive resin film.

Claim 9 (Currently Amended): An electrophoresis apparatus as set forth ~~in~~claimed in claim 7, wherein said first planar plate is made of thermosetting resin.

Claim 10 (Currently Amended): An electrophoresis apparatus as set forth ~~in~~claimed in claim 1, wherein a plurality of planar plates₁ each of which corresponds to said planar plate₁ are stacked one upon another so that channels in said plurality of planar plates are overlapped with one another, light irradiating means is provided at a position where a single excitation beam from said light irradiating means can be led through the channels in the planar plates layered one upon another, and said fluorescent detecting means ~~[[are]]~~is provided at positions in extension of outgoing windows formed in side surfaces of said planar plates stacked one upon another.

Claim 11 (Currently Amended): An electrophoresis apparatus as set forth ~~in~~claimed in claim 1, wherein a plurality of channels are formed in one and the same plane in said planar plate, ~~[[a]]~~ light irradiating means is provided at a position where a single excitation beam from said light irradiating means can pass through said plurality of channels at the same time, and ~~[[a]]~~said fluorescent detecting means

is provided at a position in extension of the outgoing window formed in the bottom surface of the planar plate.

Claim 12 (New): An electrophoresis apparatus as claimed in claim 2, wherein said planar plate is formed of a transparent member adapted to serve as said excitation transmission path and said fluorescent transmission path.

Claim 13 (New): An electrophoresis apparatus as claimed in claim 2, wherein light converging means is provided to either or each of both said excitation transmission path and said fluorescent transmission path.

Claim 14 (New): An electrophoresis apparatus as claimed in claim 2, wherein light splitting means is provided in said fluorescent transmission path.

Claim 15 (New): An electrophoresis apparatus as claimed in claim 2, wherein a spatial filter is provided in said fluorescent transmission path.

Claim 16 (New): An electrophoresis apparatus as claimed in claim 2, wherein said planar plate is composed of a first planar plate formed through transcription in one batch by means of a transcription mold incorporating a male structure for forming channels at predetermined positions and a male structure for forming optical means, and a second transparent plate joined to the first planar plate.

Claim 17 (New): An electrophoresis apparatus as claimed in claim 16, wherein said male and female structures in the transcription mold are fine structures which are formed by optically exposing and then developing a photosensitive resin film.

Claim 18 (New): An electrophoresis apparatus as claimed in claim 16, wherein said first planar plate is made of thermosetting resin.

Claim 19 (New): An electrophoresis apparatus as claimed in claim 2, wherein a plurality of planar plates, each of which corresponds to said planar plate, are stacked one upon another so that channels in said plurality of planar plates are overlapped with one another, light irradiating means is provided at a position where a single excitation beam from said light irradiating means can be led through the channels in the planar plates layered one upon another, and said fluorescent detecting means is provided at positions in extension of outgoing windows formed in side surfaces of said planar plates stacked one upon another.

Claim 20 (New): An electrophoresis apparatus as claimed in claim 2, wherein a plurality of channels are formed in one and the same plane in said planar plate, light irradiating means is provided at a position where a single excitation beam from said light irradiating means can pass through said plurality of channels at the same time, and said fluorescent detecting means is provided at a position in extension of the outgoing window formed in the bottom surface of the planar plate.